

What is claimed is:

1. A protection circuit for a fuel cell stack having one or more fuel cells, the protection circuit comprising:

5 a detection unit detecting abnormality of a potential difference between positive and negative electrodes of at least one fuel cell of the fuel cell stack; and

a bypass unit forming bypass current path between the positive and negative electrodes, the bypass unit being operative when the detection unit detects the abnormality of
10 the potential difference.

2. The protection circuit of claim 1, wherein:

the bypass unit comprises a switching device conducting an electric current when the detection unit detects the abnormality of the potential difference, the switching device
15 being connected to the fuel cell in parallel.

3. The protection circuit of claim 2, wherein:

the fuel cell is selected from the fuel cells of the fuel cell stack excepting a grounded fuel cell and the bypass unit comprises a level conversion driver switching the
20 switching device.

4. The protection circuit of claim 1, wherein:

the bypass unit comprises a first switching device cutting off an electric current when the detection unit detects the abnormality of the potential difference, the first
25 switching device connected to the fuel cell in series, and a second switching device conducting an electric current when

the detection unit detects the abnormality of the potential difference, the second switching device connected to a series of the fuel cell and the first switching device in parallel.

5. The protection circuit of claim 4, wherein:

5 the fuel cell is selected from the fuel cells of the fuel cell stack excepting a grounded fuel cell and the bypass unit comprises a level conversion driver switching the first switching device and the second switching device.

6. The protection circuit of claim 1, wherein:

10 the fuel cell is an unit fuel cell.

7. The protection circuit of claim 1, wherein:

the fuel cell comprises a series of plural unit fuel cells.

8. The protection circuit of claim 7, further comprises:

15 plural detection units respectively detecting abnormality of potential differences between the positive and negative electrodes of the plural unit fuel cells, the bypass unit being operative when at least one of the plural detection units detects the abnormality of the potential difference.

20 9. A fuel cell system comprising:

a fuel cell stack;

a detection unit detecting abnormality of a potential difference between positive and negative electrodes of at least one unit fuel cell of the fuel cell stack; and

25 a bypass unit forming bypass current path between the positive and negative electrodes, the bypass unit being

operative when the detection unit detects the abnormality of the potential difference.

10. A fuel cell system comprising:

a fuel cell stack;

5 a detection unit detecting abnormality of a potential difference between both ends of at least one series of plural unit fuel cells, the plural unit fuel cells being connected in series and constituting a part of the fuel cell stack; and

a bypass unit forming bypass current path between the
10 ends, the bypass unit being operative when the detection unit detects the abnormality of the potential difference.

11. A fuel cell system comprising:

a fuel cell stack;

plural detection units respectively detecting
15 abnormality of potential differences between the positive and negative electrodes of plural unit fuel cells, the plural unit fuel cells being connected in series and constituting a part of the fuel cell stack; and

a bypass unit forming bypass current path between both
20 ends of the series of the plural unit fuel cells, the bypass unit being operative when at least one of the plural detection units detects the abnormality of the potential difference.